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"Western Treasure -- Deep, Wet Snow"

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

COLORADO RIVER DRAINAGE BASIN

APRIL 1, 1948

By

Division of Irrigation, Soil Conservation Service

United States Department of Agriculture

and

Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

April 1, 1948

WATER SUPPLY OUTLOOK

COLORADO RIVER DRAINAGE

Snow cover on the headwaters of the Colorado River and its tributaries in Colorado, as shown by April snow surveys is well above normal. On most tributaries the snow water content is slightly above last year but on the San Juan, Animas and Dolores rivers it is substantially over April 1, 1947. Seasonal precipitation over the west slope of Colorado is much above average. On the Green River watershed in Wyoming there is a deficiency in snow cover along the west slope of the Continental Divide with an average snow water content of 87 percent of normal. Snow cover on Utah tributaries of the Green and Colorado rivers is near normal. In Arizona snow conditions are much improved over the past two seasons but reservoir storage is low. The water supply outlook in Arizona is not good.

It is estimated that the April-September flow of the Colorado will be about twenty percent above the past ten-year average.

COLORADO RIVER AND
TRIBUTARIES IN COLORADO

Colorado River (above Grand Junction). Snow cover on the Colorado River watershed above Grand Junction is 113 percent of normal and 99 percent of last year. The distribution of snow over the watershed follows an average pattern. Until recently snow has covered the valleys as far down as Grand Junction, which will add substantially to runoff. Stream flow has been well above average throughout the winter season but at present is about normal. Seasonal precipitation is above normal. Range and crop conditions are reported as good.

Gunnison River. The summer flow of the Gunnison River will be considerably above last year. Average snow water content measured on April 1 was 11 percent over last year and precipitation at valley elevations is much improved over 1947. At Ironton Park snow course on the Uncompahgre the snow water content is now 16.9 as compared to 14.7 on April 1, 1947. Stream flow has been above average. Soil moisture conditions are reported as good. Storage in Taylor Park reservoir is now 87,400 acre-feet as compared to 70,100 a year ago.

Yampa and White Rivers. Snow cover on the headwaters of the Yampa and White Rivers is above normal and slightly above last year. Stream flow in these streams is currently reported as average but temperatures have been below normal. Precipitation in the lower valley of the Yampa has been high during the season. On the White it has also been above normal. Range and crop conditions in the Meeker area are reported as good as far as soil moisture is concerned. The summer flow of the Elk and Little Snake Rivers should be somewhat above last year and the average.

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San Juan and Animas Rivers. Because of unusually heavy snow on these watersheds during February the snow water content on courses on this watershed far exceeds April 1 of last year and is about 40 percent above normal. However, no maximum snow water contents were measured on any course. The discharge of the San Juan at Rosa, New Mexico will be about 35 percent above normal for the April-September 1948 period. The flow of the Animas and adjacent streams will not be so extremely high but above last year. Precipitation at lower elevations has been over average for the winter season but recently slightly below normal. Storage in Vallecito reservoir is now 57,000 acre-feet which is just under April 1, 1947. Stream flow is about normal and range and crop conditions are reported as excellent.

Dolores River. As for other areas in southwestern Colorado the snow cover on the Dolores watershed is well above normal. Precipitation at lower elevations has been above average and much above last year. The discharge of this stream at Dolores will be about 400,000 acre-feet as compared to 285,000 last year. Soil moisture in the Dolores and Cortez area is described as excellent. Stream flow is slightly above normal. There are 13,000 acre-feet in storage in Grounhdhog and Narraquinepp reservoirs.

GREEN RIVER IN WYOMING

The summer flow of the Green River will be about half that of the summer of 1947, based on April 1 snow surveys. There is a definite deficiency of snow cover east of the main stem of the Green River and as far west as East Rim Divide. West of Big Piney the snow water content is about normal. Precipitation in the valley areas has been slightly below average except near Evanston and Kemmerer and north along the Snake River Divide. Range conditions are reported as fair to good. The discharge of the Green River at Linwood, Utah is expected to be 900,000 acre-feet for the April-September period. On Utah tributaries of the Green the snow cover is about average and similar to a year ago.

COLORADO RIVER AND TRIBUTARIES IN ARIZONA

The drought condition of the past two winter seasons in Arizona has been somewhat relieved by precipitation during February and March, especially in irrigated areas at higher elevations. However, there are no indications of improved irrigation water supply this season. Stream flow is disappointing from the winter snowfall. Soil moisture conditions are temporarily fair to good. Storage in Salt River Reservoir is 272,000 acre-feet, which is below last year and only 25 percent of the past 10-year average. In San Carlos Reservoir on the Gila River there is now stored 12,600 acre-feet as compared to 13,000 on April 1, 1947 and a 10-year average of 289,000. Snow water storage on the headwaters of the Williams and Little Colorado rivers is above average.

Storage in Lake Mead as of April 1 was 18,620,000, or 2,237,000 acre-feet above a year ago. Estimated flow of the Colorado River at Grand Canyon for the April-September 1948 period is 11,800,000 acre-feet.

[illegible][illegible][illegible]

COLORADO RIVER DRAINAGE BASIN
STREAM FLOW FORECASTS, April 1, 1948

Basin and Stream	April-Sept., Incl., Streamflow			Acre Feet	
	Forecast 1948	1947	Measured Runoff 1946		
<u>GREEN</u>					
Green at Linwood, Utah	900,000	1,817,000	1,181,000	1,092,640	1,093,000
Little Snake at Lilly	375,000		323,800	447,000	344,000
Elk at Clark	275,000	234,400	184,120	266,000	207,000
Yampa at Steamboat Springs	300,000	322,900	224,600	286,000	253,000
White at Mecker	375,000	404,000	248,000	354,000	295,000
<u>COLORADO</u>					
Colorado at Glenwood Springs	1,700,000	1,880,000	1,143,000	1,402,000	1,403,000
Roaring Fork at Glenwood Springs	900,000	1,003,000	635,000	750,000	716,000
Gunnison at Grand Junction	1,900,000	1,509,000	906,000	1,457,000	1,527,000
Uncompahgre at Colona	225,000	178,000	110,000	174,000	176,000
San Juan at Rosa, N. M.	1,100,000		280,000	663,000	754,000
Los Pinos near Bayfield	325,000	185,000	185,000	157,000	225,000
Animas at Durango	700,000	540,000	340,000	465,000	503,000
Dolores at Dolores	400,000	288,000	194,000	306,000	325,000
San Miguel at Naturita	325,000	180,000	133,000	214,000	290,000
Colorado near Grand Canyon, Ariz.	11,300,000	10,986,000	6,505,000	9,562,000	9,609,000

THE HISTORY OF THE
CITY OF BOSTON

1630	1631	1632	1633	1634	1635	1636	1637	1638	1639	1640	1641	1642	1643	1644	1645	1646	1647	1648	1649	1650	1651	1652	1653	1654	1655	1656	1657	1658	1659	1660	1661	1662	1663	1664	1665	1666	1667	1668	1669	1670	1671	1672	1673	1674	1675	1676	1677	1678	1679	1680	1681	1682	1683	1684	1685	1686	1687	1688	1689	1690	1691	1692	1693	1694	1695	1696	1697	1698	1699	1700
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SNOW SURVEYS AND IRRIGATION WATER FORECASTS

COLORADO RIVER BASIN

STATUS OF RESERVOIR STORAGE, APRIL 1, 1948

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous. A. Ft.)	THOUSANDS ACRE FEET IN STORAGE About April 1, 1948				
			1948	1947	1946	1945	10-year--avg. 1937-46*
COLORADO DRAINAGE							
Taylor River	Taylor Park	106.2	87.4	70.1	85.4	65.6	61.6
Los Pinos River	Vallecito	126.3	57.1	60.1	40.8	9.0	37.7
Groundhog Creek	Groundhog	21.7	11.0	8.0	8.5	7.5	11.8
Blue River	Green Mountain	146.9	56.0	72.4	64.1	53.0	46.6
Colorado River	Lake Mead	27935.0	18620.0	16383.0	17776.0	18029.0	17691.6
Colorado River	Lake Havasu	638.0	607.5	649.0	629.0	630.9	539.0
SALT AND GILA DRAINAGE							
Salt River	Roosevelt	1420.0	54.6	80.6	362.1	658.9	705.3
"	Horse Mesa	245.1	157.6	234.1	224.5	229.6	202.3
"	Mormon Flat	53.0	23.0	40.6	38.7	43.1	44.6
"	Stewart Mt.	70.0	36.6	52.2	19.4	43.6	42.8
Verde River	Bartlett	200.0	19.6	10.3	11.8	75.9	77.7
Agua Fria River	Carl Pleasant	173.0		14.6	3.6	28.4	33.8
Gila River	San Carlos	1200.0	12.6	13.1	26.0	120.9	289.0

*Some for shorter periods.

[illegible][illegible]

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

COLORADO RIVER BASIN

April 1, 1948

SUMMARY OF APRIL 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses in			Snow Density			1948 Water Content in percent of		
	Thirteen year			Thirteen year			Average			Thirteen year			Thirteen year		
	year	Avg.*	1947	1948	1947	1948	Avg.*	1947	1948	Percent	1947	1948	Avg.*	1947	1948
COLORADO RIVER	In.	In.	In.	In.	In.	In.	Percent	Percent	Percent	Percent	Percent	Percent	Avg.*	Percent	Percent
Colorado River**	46.8	54.1	52.7	54.1	16.1	15.9	22	30	29	31	31	29	113	99	99
Yampa River	54.6	65.8	54.0	65.8	13.1	19.8	4	32	30	33	33	30	111	109	109
White River	50.6	58.3	55.9	58.3	18.5	19.2	2	34	33	33	33	33	113	104	104
Roaring Fork	40.9	50.9	42.6	50.9	15.1	13.9	3	31	27	35	35	27	109	92	92
Gunnison River	51.1	59.0	49.9	59.0	16.6	18.2	10	32	31	33	33	31	111	110	110
Uncompahgre River	43.9	57.2	41.4	57.2	14.7	16.9	1	33	30	35	35	30	118	115	115
Dolores River	37.1	44.1	26.2	44.1	7.3	13.8	4	31	31	28	28	31	121	189	189
San Juan River	40.5	53.7	25.2	53.7	8.5	19.0	7	35	35	34	34	35	136	224	224
Animas River	32.3	46.5	27.3	46.5	9.4	14.4	3	31	31	34	34	31	144	153	153
Gila River	1.6	6.9	0.0	6.9	0.0	2.2	7	31	32	—	—	32	440	—	—
Salt River	1.0	4.9	0.0	4.9	0.0	1.7	5	40	35	—	—	35	424	—	—
Green River	43.5	46.2	42.2	46.2	13.2	12.8	20	30	28	31	31	28	97	97	97
Duchesne River	44.3	45.6	40.9	45.6	13.0	12.3	5	30	27	32	32	27	93	95	95
Colorado River***	40.2	48.6	32.3	48.6	10.2	13.7	6	31	28	31	31	28	101	134	134
Virgin River	43.6	46.7	28.5	46.7	13.8	12.8	5	36	27	48	48	27	82	93	93

*Some for shorter periods. **Above Grand Junction ***Green to Virgin Rivers

PRECIPITATION DATA

WATERSHED	STATE	Precipitation* October 1 to March 31 Inches	Departure from Normal Inches	Precipitation* March Inches	Departure from Normal Inches
Colorado	Colorado	11.05	+1.76	2.67	+0.81
Green	Wyoming	4.82	+0.25	0.87	+0.08
San Juan	New Mexico	5.04	+0.19	1.31	+0.43
Colorado	Arizona	7.42	-0.27	1.18	-0.08
Gila	New Mexico	4.51	-0.51	0.33	-0.44

Seasonal precipitation was above normal except in Arizona and western New Mexico. March precipitation followed the same pattern.

*March precipitation tentative

一、研究之目的

本研究之目的，在於探討我國經濟發展之現狀與未來趨勢。

本研究之範圍，限於我國經濟發展之現狀與未來趨勢。

本研究之方法，採採用文獻分析法與統計分析法。

本研究之結論，我國經濟發展之現狀良好，未來趨勢樂觀。

本研究之建議，政府應加強對經濟發展之支持與引導。

本研究之貢獻，在於提供我國經濟發展之現狀與未來趨勢之參考。

本研究之限制，在於資料之來源與研究方法之局限性。

本研究之展望，未來應進一步加強對經濟發展之研究與探討。

本研究之總結，我國經濟發展之現狀良好，未來趨勢樂觀。

本研究之附錄，包括相關數據與圖表之說明。

本研究之參考文獻，包括國內外相關學術著作與期刊論文。

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COLORADO RIVER SNOW SURVEYS, APRIL 1, 1948

DRAINAGE BASIN and SNOW COURSE		LOCATION			SNOW COVER MEASUREMENTS							
No. and State	Sec.	Typ.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Years of Record	Past Record Av. Water Content (Inches)	
COLORADO RIVER (Above Grand Junction)												
Park View*	7 Colo.	24	5N	9200	3/30	41.7	10.0	11.1	8.3	13	10.0	
Phantom Valley	12 "	7	5N	9300	3/28	39.8	11.2	10.8	7.1	13	9.6	
Berthoud Pass	16 "	35	2S	9700	4/1	57.6	17.1	17.8	15.8	13	15.8	
Tennessee Pass*	19 "	21	8S	10200	3/31	45.4	12.1	10.1	15.4	13	9.4	
Ind. Pass Tunnel	33 "	30	11S	10200	3/31	64.4	18.1	25.5	18.6	13	14.1	
N. Lost Trail Cr.	34 "	20	11S	9200	4/1	60.6	17.3	13.4	8.4	13	14.1	
M. Fork Camp Cr.	37 "	16	3S	9000	4/1	36.6	8.1	11.3	9.3	13	9.8	
Tiddler Gulch	44 "	1	8S	11000	4/1	63.5	19.2	18.0	14.3	13	14.7	
Nast	45 "	1	9S	8700	4/3	27.1	6.4	6.2	11.9	13	15.7	
Mesa Lakes	56 "	35	11S	10000	4/2	62.5	21.1	17.2	13.9	12	16.6	
Lulu	59 "	25	6N	10200	3/27	53.5	17.3	17.2	9.4	11	12.3	
Willow Creek P.	62 "	1	4N	9500	3/30	51.0	14.2	14.6	7.1	11	9.0	
N. Inlet Grand L.	64 "	26	4N	9000	3/31	39.3	11.4	13.3	19.4	11	20.4	
Lake Irene	65 "	8	5N	10600	3/30	42.1	23.8	23.2	17.5	11	18.5	
Thunderbolt Peak	66 "	22	2N	9500	3/28	46.9	18.1	19.8	6.8	11	10.7	
Arrow	69 "	34	1S	9900	4/1	45.4	12.7	12.1	15.4	11	15.9	
Lapland	70 "	16	2S	9300	4/1	47.0	13.3	17.3	19.5	11	27.7	
Fremont Pass #2	79 "	2	8S	11400	3/29	59.9	17.3	30.4	15.4	13	15.9	
Trickle Divide	85 "	23	11S	10000	4/1	91.7	29.8	16.7	8.9	9	12.8	
Lynx Pass No. 2	91 "	27	2N	9100	4/1	53.0	14.1	18.9	17.0	13	17.2	
Shrine Pass	96 "	15	6S	10500	3/29	63.7	19.4	21.3	17.6	7	9.2	
Grizzly Peak	97 "	2	5S	11250	3/27	59.0	16.4	18.5	11.0	7	13.6	
Ivanhoe	100 "	12	9S	10400	4/1	35.0	8.0	10.4	11.6	2	14.1	
Glen-Mar Ranch	102 "	31	12S	8350	4/1	44.1	13.6	16.1	17.0	1	17.8	
Monarch Lake	106 "	30	2N	8500	3/28	54.1	15.9	16.1	15.4			
Average for drainage							65.8	19.8	18.1	15.4		
YAMPA RIVER												
Dry Lake	6 Colo.	26	7N	8200	4/2	65.6	21.7	18.4	17.0	13	20.0	
Columbine Lodge*	8 "	21	5N	9300	3/31	78.4	25.2	22.6	21.5	13	22.0	
Elk River	9 "	6	10N	8700	4/1	65.0	18.0	14.7	14.2	13	16.6	
Lynx Pass No. 2*	91 "	27	2N	9100	4/1	53.0	14.1	16.7	8.9	13	12.8	
Average for drainage							65.8	19.8	18.1	15.4		
WHITE RIVER												
Burro Mountain	35 Colo.	15	2S	9000	4/1	65.8	21.6	19.5	15.1	13	18.7	
Rio Blanco	36 "	28	1N	8500	4/3	50.8	16.9	17.5	10.3	13	15.3	
Average for drainage							53.3	19.2	18.5	12.7		

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, APRIL 1, 1948

LOCATION					SNOW COURSE MEASUREMENTS					
No. and State	Sec.	Twp. Lat.	Range Long.	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Past Record Av. Water Content (Inches)
							1946	1947	1948	
DRAINAGE BASIN and SNOW COVER										
ROARING FORK										
Ind. Pass Tunnel	30	11S	82W	10200	3/31	64.4	18.6	25.5	18.1	18.4
N. Lost Trail Cr.	20	11S	87W	9200	4/1	60.6	8.4	13.4	17.3	14.1
West	1	9S	83W	8700	4/3	27.7	1.9	6.4	6.4	5.7
Ivanhoe	12	9S	82W	10400			11.0	18.5	13.9	
		Average for drainage				50.9	9.6	15.1		12.7
GUNNISON RIVER										
Crested Butte	22	13S	86W	9000	4/1	59.6	8.3	13.4	15.3	14.7
Marshall Creek	24	48N	6E	10800	4/2	46.8	7.6	11.9	13.8	13.1
Poncha Creek*	19	48N	7E	10500	4/2	39.6	6.1	9.7	11.9	11.1
Park Cone	19	14S	82W	9700	3/31	43.1	7.1	10.2	12.6	9.4
Alexander Lake	2	12S	95W	10000	3/29	81.4	13.4	25.0	26.6	23.9
Snowshoe Mesa	14	13S	89W	7500	3/30	28.1	4.2	7.8	9.8	7.9
Ironton Park	29	43N	7W	9800	4/1	57.2	10.2	14.7	16.9	14.3
Trickle Divide	23	11S	94W	10000	3/20	91.7	19.5	30.4	29.8	27.7
Park Reservoir	34	11S	94W	9500	3/30	83.3	15.4	27.3	27.8	25.3
Porphyry Creek	19	49N	6E	10800	4/1	59.3	12.2	16.0	17.7	16.5
Kannah Creek	5	12S	95W	10700	4/2	84.1	---	26.8	30.1	28.4
Lake City	13	43N	4W	10300	4/1	34.5	---	---	9.2	
		Average for Drainage				59.0	10.4	16.6	18.2	16.4
UNCOMPAHGRE RIVER										
Ironton Park	29	43N	7W	9800	4/1	57.2	10.2	14.7	16.9	14.3
SAN JUAN RIVER										
Wolf Creek Pass*	4	37N	2E	10000	3/31	106.0	12.7	20.7	39.3	29.7
Upper San Juan	10	37N	1E	10000	3/31	119.2	14.5	21.3	43.7	33.4
Silverton Sub.S.	10	41N	7W	9400	4/1	29.4	0.3	5.4	8.4	4.7
Cascade	12	39N	9W	8850	4/1	53.0	2.0	8.2	17.8	11.0
Granite Peaks	24	37N	6W	7950	3/30	21.9	0.3	0.0	6.0	8.0
Chama Divide*	17 N.Mex.	36.9N	106.7W	7750	4/3	10.0	0.0	0.0	5.2	2.8
Chamita*	18 "	36.9N	106.7W	8500	4/3	36.3	2.6	4.2	12.6	8.6
		Average for drainage				53.7	4.6	8.5	19.0	14.0

*On adjacent drainage

THE HISTORY OF THE UNITED STATES

CHAPTER I. THE DISCOVERY OF AMERICA

THE DISCOVERY OF AMERICA, by Christopher Columbus, in 1492, is one of the most important events in the history of the world.

It opened up a new world of discovery and exploration, and led to the establishment of a new continent.

The discovery of America was a great triumph for the human race, and it has led to the development of a new world.

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COLORADO RIVER SNOW SURVEYS, APRIL 1, 1948

DRAINAGE BASIN and SNOW COURSE		LOCATION		SNOW COURSE MEASUREMENTS											
				Water Content (Inches)							Past Record				
				No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	1948	1947	1946	Years of Record	Av. Water Content (Inches)
COLORADO RIVER															
Rico	23	Colo.	11	39N	11W	8700	4/2	32.7	10.4	3.6	0.0	13	8.1		
Telluride	24	"	6	42N	8W	8600	3/31	36.6	9.8	4.9	1.9	13	7.4		
Lizard Head	25	"	24	41N	10W	10300	4/2	64.4	22.6	14.6	11.4	13	17.6		
Lone Cone	90	"	23	41N	13W	8900	3/31	42.6	12.4	6.1	5.9	8	12.3		
				Average for drainage					44.1	13.8	7.3	4.8	11.4		
ANIMAS RIVER															
Silverton SS	30	Colo.	10	41N	7W	9400	4/1	29.4	8.4	5.4	0.3	13	4.7		
Cascade	31	"	12	39N	9W	8850	4/1	53.0	17.8	8.2	2.0	13	11.0		
Ironton Park*	58	"	29	43N	9W	9800	4/1	57.2	16.9	14.7	10.2	12	14.3		
				Average for drainage					46.5	14.4	9.4	4.2	10.0		
GILA RIVER															
Frisco Divide	11	N. Mex.	31	6S	20W	8000	4/2	12.5	3.9	0.0	0.0	11	0.8		
State Line	14	"	6	6S	21W	8000	4/2	6.1	1.3	0.0	0.0	11	0.5		
Taylor Creek	22	"	20	10S	10W	7850	4/1	0.0	0.0	0.0	—	6	0.0		
Inman	23	"	6	11S	10W	7800	4/1	0.0	0.0	0.0	—	3	0.0		
Nutriosio	3	Ariz.	23	6N	30E	8500	4/2	10.2	2.9	0.0	0.0	11	0.5		
Beaver Head	4	"	13	4N	30E	8000	4/2	8.3	2.9	0.0	—	10	0.9		
Coronado Trail	5	"	26	5N	30E	8000	4/2	11.3	4.1	0.0	0.0	11	1.0		
				Average for drainage					6.9	2.2	0.0	0.0	0.5		
SALT RIVER															
McNary	6	Ariz.	14	8N	23E	7200	4/1	3.1	1.3	0.0	0.0	10	0.3		
Forestdale	7	"	2	9N	21E	6000	4/1	0.0	0.0	0.0	0.0	10	0.0		
Milk Ranch	9	"	28	8N	23E	7000	4/1	0.0	0.0	0.0	0.0	7	0.0		
Nutriosio*	3	"	23	6N	30E	8500	4/1	10.2	2.9	0.0	0.0	10	0.5		
Coronado Trail*	5	"	26	5N	30E	8000	4/2	11.3	4.1	0.0	0.0	11	1.0		
				Average for drainage					4.9	1.7	0.0	0.0	0.4		

*On adjacent drainage

1870-1871

1872-1873

1874-1875

1876-1877

1878-1879

1880-1881

1882-1883

1884-1885

1886-1887

1888-1889

1890-1891

1892-1893

1894-1895

1896-1897

1898-1899

1900-1901

COLORADO RIVER SNOW SURVEYS, April 1, 1948

DRAINAGE BASIN and SNOW COURSE	LOCATION				SNOW COURSE MEASUREMENTS					
	No. and State	Sec.	Twp.	Range Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Past Record Av. Water Content (Inches)
VERDE RIVER							1943	1947	1946	
Iron Springs*	11 Ariz.	22	14N	3W 6200	4/1	0.0	0.0	0.0	0.0	0.0
Camp Wood	12 "	3	16N	6W 5700	4/1	0.0	0.0	0.0	---	0.0
Mingus Mountain	"	3	15N	2E 7100	4/1	0.0	0.0	0.0	---	0.0
Mormon Lake*	"	13	18N	8E 7350	3/31	27.7	10.0	0.0	---	5.0
Fort Valley*	"	22	22N	6E 7350	4/1	0.6	0.1	0.0	---	0.1
Chalender*	"	27	22N	3E 7100	4/1	5.4	1.7	0.0	---	0.9
	Average for drainage					5.6	2.0	0.0	---	1.0
LITTLE COLORADO RIVER										
Forestdale*	7 Ariz.	2	9N	21E 6000	4/1	0.0	0.0	0.0	0.0	0.0
McNary	6 "	14	8N	23E 7200	4/1	3.1	1.3	0.0	0.0	0.3
Nutrios*	3 "	23	6N	30E 8500	4/2	10.2	2.9	0.0	0.0	0.5
Mormon Lake	"	13	18N	8E 7350	3/31	27.7	10.0	0.0	---	5.0
Fort Valley	"	22	22N	6E 7350	4/1	0.6	0.1	0.0	---	0.1
Bright Angel	Ariz.	34	33N	3E 8400	3/30	32.8	10.1	0.0	.	
GrandCanyon	Ariz.	21	30N	4E 7500	3/30	3.7	1.5	0.0	---	
	Average for drainage					4.4	1.4	0.0	---	0.2
WILLIAMS RIVER										
Iron Springs	11 Ariz.	22	14N	3W 6200	4/1	0.0	0.0	0.0	0.0	0.0
Camp Wood*	12 "	3	16N	6W 5700	4/1	0.0	0.0	0.0	---	0.0
Willow Ranch	"	16	21N	11W 5000	4/1	0.0	0.0	0.0	---	0.0
	Average for drainage					0.0	0.0	0.0	---	0.0

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, April 1, 1948

DRAINAGE BASIN and SNOW COURSE		LOCATION			SNOW COURSE MEASUREMENTS								
		No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Past Record Av. Water Content (Inches)	
									1943	1947	1946	Years of Record	
GREEN RIVER	44 Wyo.	32	37N	111W	7950	4/1	34.0		7.7	9.7	11.6	13	11.0
	23 "	33	31N	104W	8700					9.0			
	24 "	17	35N	108W	8900	4/1	32.5		7.0	13.2	13.2	13	10.1
	25 "	23	38N	110W	7900	4/1	28.3		6.3	11.9	15.5	12	11.0
	26 "	14	37N	111W	8500	4/1	48.9		15.3	16.7	18.6	13	15.4
	27 "	15	29N	114W	8040	3/30	46.1		12.8	11.6	17.9	12	11.9
	28 "	19	29N	114W	8820	3/31	58.1		17.1	17.0	21.8	12	16.5
Daniels-Stwbrry Lost Lake East Portal E.Port.Strawbry D. Hewinta R.S. Hole-In-Rock Lake Fork Mtn. Paradise Park Mosby Mtn.No. 2 King's Cabin Indian Canyon Gooseberry Res. Mammoth R.S. Staley Ranch Dry Valley Divide Clear Creek Hntngtn-Hrseshoe Widtsoe Esclnite	23 Utah	17	2S	12W	8000	3/29	48.0		14.3	12.5	11.0	13	14.4
	28 "	4	2S	9E	9900	4/2	73.1		19.7		—	12	23.8
	33 "	36	7S	6E	7600	3/27	35.6		9.8	9.0	10.4	13	12.0
	33A "	34	7S	6E	8000	3/27	59.2		17.2	18.2	19.1	13	20.2
	34 "	33	3N	13E	9500	3/26	42.5		12.2	9.2	10.4	10	9.4
	35 "	13	2N	15E	9150	3/17	32.6		8.1	6.4	—	12	5.8
	36 "	2	2N	5W	10500	3/26	41.0		10.2	12.6	8.4	13	10.0
	37 "	7	3N	1E	10500	3/24	54.9		14.4	17.7	8.1	12	12.1
	38 "	5	2N	1E	9500	3/25	48.1		11.8	15.6		12	9.6
	39 "	22	1S	21E	8800	3/31	54.1		13.0	11.1	9.0	13	10.1
	40 "	2	11S	10E	9100	3/30	44.1		10.1	12.6	4.0	13	9.4
	41 "	25	11S	5E	8700	4/3	56.2		17.3	16.2	16.4	13	19.9
	42 "	13	13S	5E	8800	4/3	55.8		17.6	15.4	16.9	13	21.2
	42A "	32	12S	7E	7600	3/26	23.0		7.0		3.5	10	6.0
	42B "	20	12S	8E	7800	3/26	27.3		11.3		7.0	11	9.2
	42C "	28	13S	7E	8150	3/26	24.0		7.0		2.5	10	7.2
	43 "	12	14S	5E	9800	4/3	67.5		23.0	19.3	21.7	13	25.5
	53 "	22	34S	1W	9500	3/31	36.8		10.8	8.0	4.1	12	9.6
	Average for drainage							46.2	12.8	13.2	13.2	13.2	

© Average for period of record.

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COLORADO RIVER SNOW SURVEYS, April 1, 1948

DRAINAGE BASIN and SNOW COURSE	LOCATION				SNOW COURSE MEASUREMENTS							
	No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Av. Water Content (Inches)	
								1948	1947	1946		Years of Record
COLORADO (Green to Virgin Rivers)												
G.B.E.S. Alpine*	47 Utah	26	17S	4E	10200	3/30	73.9	23.2	24.6	—	12	22.5
Sealey Cr. R.S.	48 "	25	17S	4E	10000	3/30	46.4	13.7	14.1	15.7	11	16.6
Fish Lake	51 "	35	26S	1E	8700	3/31	45.4	8.8	4.3	5.4	13	6.4
Bryce Canon NP.*	54 "	36	36S	4W	8000	3/23	32.2	7.2	0.0	0.0	11	5.2
La Sal Mountain	64 "	29	26S	24E	8500	3/29	41.0	12.7	7.2	6.1	13	9.6
Buckboard Flat	65 "	36	33S	22E	9000	3/29	52.7	16.7	10.8	7.2	12	15.0
			Average for drainage				48.6	13.7	10.2	6.9		12.6
VIRGIN RIVER												
Gravel Spgs. Jnct.	56 Utah	22	38S	6W	7500	3/24	9.5	2.7	0.0	0.0	13	5.5
Harris Flat R.S.*	57 "	24	38S	7W	7700	3/24	35.1	3.1	0.0	3.1	13	9.9
Duck Creek R.S.*	58 "	11	38S	8W	8560	3/25	50.9	14.4	13.4	8.3	12	16.9
Cedar Breaks*	59 "	13	37S	9W	10200	3/26	71.1	21.2	36.8	16.1	13	26.1
Webster Flats RS*	61	20	37S	9W	9200	3/22	66.7	17.8	18.7	11.5	13	20.0
			Average for drainage				46.7	12.8	13.8	7.8		15.7
DUCHESNE RIVER												
Daniels-Stwbrry	23 Utah	7	2S	12W	8000	3/29	48.0	14.3	12.5	11.0	13	14.4
Lost Lake	28 "	4	2S	9E	9900	4/2	73.1	19.7	—	—	12	23.8
East Portal	33 "	36	7S	6E	7600	3/27	35.6	9.8	9.0	10.4	13	12.0
E.Port. Strwabry D.	33A "	34	7S	6E	8000	3/27	59.2	17.2	18.2	19.1	13	20.2
Lake Fork Mtn.	36 "	2	2N	5W	10500	3/26	41.0	10.2	12.6	8.4	13	10.0
Indian Canyon	40 "	2	11S	10E	9100	3/30	44.1	10.1	12.6	4.0	13	9.4
			Average for drainage				45.6	12.3	13.0	10.5		13.2

*On adjacent drainage.

@Average for period of record.

1937-1938

1938-1939

1939-1940

1940-1941

1941-1942

1942-1943

1943-1944

1944-1945

1945-1946

1946-1947

1947-1948

1948-1949

1949-1950

1950-1951

1951-1952

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE

Colorado State Engineer
Wyoming State Engineer
Utah State Engineer
New Mexico State Engineer
Montana State Engineer
Nebraska State Engineer
Colorado Experiment Station
Colorado Extension Service
Montana Experiment Station
Utah Experiment Station

FEDERAL

Department of Agriculture
Forest Service
Soil Conservation Service
Department of Interior
Bureau of Reclamation
Geological Survey
National Park Service
Department of Commerce
Weather Bureau
War Department
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PUBLIC UTILITIES

Colorado Public Service Company
Western Colorado Power Company
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Public Service Company of New Mexico
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WATER USERS ORGANIZATIONS

Poudre Valley Water Users' Association
Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
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Uncompahgre Valley Water Users' Association
Wyoming Development Company
Goshen Irrigation District
Kendrick Project
Pathfinder Irrigation District
Salt River Valley Water Users' Association
San Carlos Irrigation and Drainage District
Twin Lakes Reservoir and Canal Company

Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

